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## NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 09/09/2009

Siemens Corporation  
Intellectual Property Department  
170 Wood Avenue South  
Iselin, NJ 08830

EXAMINER

NILANONT, YOUPAPORN

ART UNIT

PAPER NUMBER

2446

DATE MAILED: 09/09/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/525,153

10/11/2005

Joachim Charzinski

2002P13482WOUS

5278

TITLE OF INVENTION: EFFICIENT INTRA-DOMAIN ROUTING IN PACKET-SWITCHED NETWORKS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/09/2009

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE  
Commissioner for Patents  
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or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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09/09/2009

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Intellectual Property Department  
170 Wood Avenue South  
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## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,153	10/11/2005	Joachim Charzinski	2002P13482WOUS	5278

TITLE OF INVENTION: EFFICIENT INTRA-DOMAIN ROUTING IN PACKET-SWITCHED NETWORKS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/09/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
NILANONT, YOUNG PAPORN	2446	709-239000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_
- 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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EXAMINER

NILANONT, YOUPAPORN

ART UNIT

PAPER NUMBER

2446

DATE MAILED: 09/09/2009

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 697 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 697 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/525,153	CHARZINSKI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	YOU PAPORN NILANONT	2446	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Request for Continued Examination filed July 16, 2009.
2. ☒ The allowed claim(s) is/are renumbered 1-14.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date ____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date ____     | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other ____.   |

**EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview and email with Ms. Ren Ye on 09/04/09.

The application has been amended as follows:

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In the claims:

18. (Currently Amended) A method for routing of data packets for avoiding circulation of the data packets, in a packet-switched network connected to a plurality of external networks, the method comprising:

assigning unique node identifiers to nodes of a packet switched network (N1);

providing a destination table that associates for each external network connected to the packet switched network (N1) an Egress Label (EL) based on the unique node number for the node that comprises an exit point to that external network;

providing a routing table for each node in the packet-switched network (N1) for forwarding data packets through the packet-switched network comprising Ingress/Egress Label (IL/EL) pairs, wherein the Ingress Label (IL) is based on the unique node number for the node that comprises an entry point into the packet switched network (N1), wherein each IL/EL pair is associated with next hop data;

appending a label to a data packet at an ingress node where the data packet enters ~~[[packet switched]]~~ packet-switched network (N1), wherein the label comprises an Ingress Label(IL) based on the unique node number for the node that comprises the entry point into the ~~[[packet switched]]~~ packet-switched network (N1) and an Egress Label (EL) extracted from the destination table by reference to the external network address in the data packet, representing the ingress node and an egress node where the data packet will enter and leave the packet-switched network (N1), respectively;

forwarding the data packet from the ingress node to the egress node by an internal router of the packet-switched network by accessing the routing table for each node traversed in the packet-switched network, and reading the next hop data for the IL/EL pair that coincides with the label; and

providing alternative loop-free routes for the forwarding of the data packet in the routing table for each IL/EL pair when an alternate next hop is available, wherein loops are avoided because the ingress node identified by the IL is excluded as an alternative route,

wherein

the data packet is supplied with two data fields, wherein

each of the data fields is added to the data packet as a header or a trailer,

wherein

one of the data fields includes an identifier for the ingress node and the other

data field includes an identifier for the egress node, and

wherein a bit sequence is appended to or prefixed to at least one data field,

identifying the data field as such.

19. (Previously Presented) The method according to Claim 18, further comprising:

providing the data packet at the ingress node with identification data used by the internal router to identify the ingress node and egress node.

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20. (Previously Presented) The method according to Claim 19, wherein the identification data include an identifier or a network address for the ingress node and egress node.

21. (Previously Presented) The method according to Claim 20, wherein  
at the ingress node the data packet is supplied with a data field, and wherein  
the internal router takes from the data field the data about the ingress node at  
which the packet entered the packet-switched network and the data about its egress  
node.

22. (Previously Presented) The method according to Claim 21, wherein  
the data packet is supplied with a data field, wherein  
the data field is added onto the data packet as a header or a trailer, and wherein  
the data field includes an identifier for the ingress node and the egress node.

23. (Canceled).

24. (Canceled).

25. (Previously Presented) The method according to Claim 22, wherein  
at the ingress node, the data packet is supplied with at least one data field, and  
wherein  
this data field is removed at the egress node.



26. (Previously Presented) The method according to Claim 21, wherein at least one data field is provided by a Multiprotocol Label Switching label.

27. (Previously Presented) The method according to Claim 20, wherein the identification data is written into a field provided as part of the format for the data packet.

28. (Previously Presented) The method according to Claim 18, wherein

the egress node is referenced by an identifier, wherein

the identifier of the egress node is determined by reference to a network address in the network, to which the data packet is to be forwarded after it has traversed the packet-switched network, and wherein

the determination of the identifier of the egress node is carried out at the ingress node by reference to the network address, using a table.

29. (Previously Presented) The method according to Claim 18, further comprising:

supplying the data packet at the ingress node with an identification data used by the internal router for identifying the ingress node, wherein the identification data include an identifier or a network address for the ingress node; and

determining the data about the egress node by the internal router by using address data extracted from the data packet.

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30. (Previously Presented) The method according to Claim 18, wherein the internal router determines the data about the ingress node and the data about the egress node by using address data extracted from the data packet.

31. (Previously Presented) The method according to Claim 18, wherein the routing table assigns the data about the ingress node at which the data packet entered the packet-switched network and the data about the egress node to a network address for the next hop.

32. (Previously Presented) The method according to Claim 18, further comprising:

supplying the data packet at the ingress node with a data field for identifying the flow; and

performing the forwarding of the data packet by the internal router according to the data field.

33. (Cancelled).

34. (Currently Amended) An internal router in a packet-switched network having a plurality of nodes, connected to a plurality of external networks for performing a method for routing of data packets for avoiding circulation of the data packets, comprising:

a destination table that associates for each external network connected to the packet switched network an Egress Label (EL) based on a unique node number assigned to each node that comprises an exit point to that external network;

a routing table for each node in the packet-switched network for forwarding data packets through the packet-switched network comprising Ingress/Egress Label (IL/EL) pairs, wherein the Ingress Label (IL) is based on the unique node number for the node that comprises an entry point into the packet switched network, wherein each IL/EL pair is associated with next hop data;

wherein the internal router:

appends a label to a data packet at an ingress node where the data packet enters the ~~[[packet switched]]~~ packet-switched network, wherein the label comprises an Ingress Label (IL) based on the unique node number for the node that comprises the entry point into the ~~[[packet switched]]~~ packet-switched network and an Egress Label (EL) extracted from the destination table by reference to the external network address in the data packet, representing the ingress node and an egress node where the data packet will enter and leave the packet-switched network, respectively;

forwards the data packet from the ingress node to the egress node by an internal router of the packet-switched network by accessing the routing table for each node traversed in the packet-switched network, and reading the next hop data for the IL/EL pair that coincides with the label; and

provides alternative loop-free routes for the forwarding of the data packet in the routing table for each IL/EL pair when an alternate next hop is available, wherein loops

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are avoided because the ingress node identified by the IL is excluded as an alternative route,

wherein

the data packet is supplied with two data fields, wherein

each of the data fields is added to the data packet as a header or a trailer,

wherein

one of the data fields includes an identifier for the ingress node and the other

data field includes an identifier for the egress node, and

wherein a bit sequence is appended to or prefixed to at least one data field,

identifying the data field as such.

## **REASONS FOR ALLOWANCE**

The following is an examiner's statement of reasons for allowance:

Renumbered independent claims 1 and 14 among other things routing of data packets for avoiding circulation of the data packets, in a packet-switched network connected to a plurality of external networks by assigning unique node identifiers to nodes of a packet-switched network; providing a destination table that associates for each external network connected to the packet switched network an Egress label based on the unique node number for the node that comprises an exit point to that external network; providing a routing table for each node in the packet-switched network for forwarding data packets through the packet-switched network comprising Ingress/Egress Label pairs, wherein the Ingress Label is based on the unique node number for the node that comprises an entry point into the packet-switched network, wherein each Ingress/Egress Label pair is associated with next hop data; appending a label to a data packet at an ingress node where the data packet enters the packet-switched network and an Egress Label extracted from the destination table by reference to the external network address in the data packet, representing the ingress node and an egress node where the data packet will enter and leave the packet-switched network, respectively; forwarding the data packet from the ingress node to the egress node by an internal router of the packet-switched network by accessing the routing table for each node traversed in the packet-switched network, and reading the next hop data for the Ingress/Egress Label pair that coincides with the label; and providing alternative

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loop-free routes for the forwarding of the data packet in the routing table for each Ingress/Egress Label pair when an alternate next hop is available, wherein loops are avoided because the ingress node identified by the Ingress Label is excluded as an alternative route, wherein the data packet is supplied with two data fields, wherein each data field is added to the data packet as a header or a trailer, wherein one of the data fields includes an identifier of the ingress node and the other data field includes an identifier for the egress node, and wherein a bit sequence is appended or prefixed to at least one data field, identifying the data field as such.

The prior art does not teach nor suggest in an obvious way a loop-free routing of the data packet in which the appending or prefixing of a bit sequence to identify the data field appended to the data packet as being a field containing an Ingress or Egress identifier is used wherein Ingress identifier is used as a way to prevent loops in routing.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### **CORRESPONDANCE INFORMATION**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Youpaporn Nilanont whose telephone number is (571)270-5655. The examiner can normally be reached on 9:30 AM-6:00PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey C. Pwu can be reached on (571)272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y.N./  
Examiner, Art Unit 2446

/Jeffrey Pwu/  
Supervisory Patent Examiner, Art Unit 2446

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